



## Temperament Styles of Children from Japan and the United States: A Cross-national Study

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**Abstract** Age, gender, and cross-national differences in children ages 9 through 16 in Japan ( $N = 493$ ) and the United States ( $N = 500$ ) are examined on four bipolar temperament styles: extroversion-introversion, practical-imaginative, thinking-feeling, and organized-flexible. Japanese children generally prefer extroverted to introverted, practical to imaginative, and organized to flexible styles. Although their preference for thinking and feeling styles is balanced, gender differences are significant. Males generally prefer a thinking style and females generally prefer a feeling style. Gender and age differences are apparent on organized-flexible styles. Females generally prefer an organized style while males are more likely to prefer a flexible style. In contrast to other age groups, 9-10 old children are more likely to prefer an organized style. An increased preference for a flexible style is seen at each older age. Cross-national differences are found only on extroverted-introverted and practical-imaginative styles. In contrast to children in the U.S., those in Japan are more likely to prefer extroverted and practical styles.

**Keywords:** Temperament, Student Styles Questionnaire, children, Japanese children

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### Introduction

People have been interested in temperament to describe and explain behavior for centuries (Joyce, 2010). For example, Hippocrates speculated about temperament in 350 B.C. in his *On the Nature of Man*. Philosophers, including Plato, Aristotle, Galen, Bruno, Hume, Voltaire, Rousseau, Locke, and Kant also discussed the importance of temperament (Kagan, 1989, 1994a, 1994b; Keirse, 1998; Rothbart & Jones, 1978; Strelau & Angleitner, 1994).

Temperament consists of stylistic and relatively stable traits that subsume intrinsic tendencies to act and react in somewhat predictable ways to people, events, and stimuli (Teglasi, 1998a; 1998b). Temperament traits generally are characterized as predispositions to display behaviors, with no assurance that people, events, and stimuli always will elicit the

same temperament behaviors. Temperament is a construct that is associated with certain behaviors. These behaviors reflect a tendency or disposition to act or react in certain ways. Temperament traits appear early in life (e. g., Thomas & Chess 1977; Goldsmith, et al., 1987) and thus are assumed to have a biological origin, one tempered both by one's environment as well as personal choice (Bates & Wachs, 1994; Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987; Kagan, 1994; Keogh, 2003; Oakland, Glutting, & Horton, 1996). Age and gender also are assumed to influence temperament.

Children's temperament can have a substantial impact on their behaviors. Temperament is thought to influence the source for personal motivation, learning styles, peer and family relationships, and values (Bates & Wachs, 1994; Hofstede, 1980; Joyce, 2010; Keirsey & Bates, 1984; Keogh, 2003; Lawrence, 1982; Oakland, Glutting, & Horton, 1996). Temperament can account for significant variance associated with vocational interests in children as young as 8 (Oakland, Stafford, Horton, & Glutting, 2001) and may help distinguish children who are and are not gifted (Oakland, Joyce, Horton, & Glutting, 2000) as well as those who do and do not display conduct and oppositional defiant disorders (Joyce & Oakland, 2005). Style preferences of sighted and non-sighted children also were compared (Oakland, Banner, & Livingston, 2000). Thus, knowledge of children's temperament shows promise for use in understanding the impact of temperament on children's behaviors.

### Temperament Styles Theory and Current Assessment

Jung advanced a contemporary temperament theory (1953, 1971) that helped launched considerable research and test development (Bassett & Oakland, 2009). Jung (1921, 1959) attributed individual differences to inborn, possibly genetic or physiological qualities mediated by one's environment. He emphasized the importance of two attitudes (i.e. extraversion-introversion) together with four mental functions (i.e. thinking-feeling and sensation-intuition) that impact the apprehension of stimuli. His writings focused heavily on extraversion-introversion, given his belief that they helped define important individual differences. However, for Jung, temperament is understood best by examining interactions between extroversion-introversion and the four mental functions (i. e., thinking feeling and sensation-intuition), not by focusing on each dyadic pair separately.

Briggs and Myers' successful application of Jung's theory in test form, the Myers-Briggs Type Indicator (MBTI; Myers & McCaulley, 1985), brought Jung's theory to life and set the stage for its dissemination and practical applications, with the MBTI reportedly the most widely used measure in the world (Myers et al., 1998). In developing the MBTI, Briggs and Myers utilized Jung's extroversion-introversion, separated his thinking-feeling and sensation-intuition into two separate traits, and added a fourth: judging-perceptive.

Keirsey developed the *Keirsey Temperament Sorter*, a brief self-report measure of the 16 MBTI types (Keirsey & Bates, 1970). In interpreting a person's temperament type, Keirsey believed that similarities rather than the differences are more important and that Hippocrates' idea of body fluids can be related to the four core clusters (i.e., sensing-perceiving, sensing-judging, intuition-thinking, and intuition-feeling) of temperament. The revised and current version of the instrument, *Keirsey Temperament Sorter®- II* (Keirsey, 1998), adopted a new model that reflects the basic functions of individuals in society. Hence, the core clusters were renamed: artisan for sensing-perceiving, guardian for sensing-judging, rational for intuition-thinking, and idealist for intuition-feeling. This new model also is aligned with Plato's notion of temperament (Joyce, 2010).

Two instruments were developed that operationalized the Briggs and Myers' theory of temperament for children and youth. The Murphy-Meisgeier Type Indicator for Children (MMTIC: Meisgeier & Murphy, 1987) is a parallel measure of MBTI's temperament types in children ages seven through 18. The MMTIC was developed primarily to provide information that can be useful in understanding a child's learning process. The current version of the MMTIC is accompanied with teacher resources for classroom application of the temperament type theory (Murphy & Meisgeier, 2008).

The Students Styles Questionnaire (SSQ: Oakland et al., 1996) also assesses the four temperament traits measured by the MBTI for children and youth ages eight through 18. It has been used somewhat more widely internationally. The SSQ is based on the premise that temperament results from an interaction between biologically coded qualities, environmental qualities and personal choice. As presented in Table 1, the SSQ assesses four temperament style dimensions for ages 8-17: extroversion-introversion, practical-imaginative (consistent with the MBTI's sensing-intuitive), thinking-feeling and organized-flexible (consistent with the MBTI's judging-perceiving).

Table 1  
*Descriptions of Temperament Qualities (from Horton & Oakland, 1997)*

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### Extroversion-Introversion Styles

This dimension describes individuals' orientations to the outer world of people and events around them. Those with extroverted preferences generally are energized by contact with people, while those with introverted preferences generally derive energy from their inner world of thoughts.

Those with an extroverted style generally  
 learn by talking  
 enjoy large groups  
 have many interests & friends  
 respond quickly

Those with an introverted style generally  
 learn by reflecting and writing  
 prefer small groups or solitude  
 have a few interests and close friends  
 respond with hesitance & caution

### Practical-Imaginative Styles

This dimension describes individuals' orientations to ideas and experience. Those with practical preferences generally attend to facts and objects, while those with imaginative preferences generally view the world in terms of possibilities and insights.

Those with a practical style generally are  
 generally realistic/pragmatic  
 understand things literally  
 enjoy sequential learning  
 notice details

Those with an imaginative style are  
 insightful/visionary/theory oriented  
 enjoy metaphor/symbolism  
 learn by insight/intuitive leaps  
 notice themes/generalizations

*Cont. of Table 1*

### Thinking-Feeling Styles

This dimension describes individuals' orientations for making decisions. Those with thinking preferences generally use objective standards to make decisions and strive for fairness, while those with feeling preferences generally use personal standards to make decisions and strive for harmony.

Those with a thinking style generally  
are analytical/quizzical  
value logic over sentiment  
brief/businesslike interactions  
strive for fairness/truth/justice

Those with a feeling style generally  
are trusting/sympathetic/seek harmony  
value sentiment over logic display  
are tactful/friendly interactions  
strive for harmony/compassion

### Organized-Flexible Styles

This dimension describes individuals' orientations as to when they make decisions. Those with organized preference styles generally prefer to finalize decisions and have issues settled as soon as possible while those with flexible preference styles generally prefer to delay decisions and keep their options open.

Those with an organized style generally  
want to plan/schedule  
persist, are dependable  
keep personal space neat  
enjoy predictable/structure

Those with a flexible style generally  
are flexible in commitments  
seek opportunity for play  
tolerate disorder of possessions  
enjoy surprise/adaptive to change

### Gender and Age Differences in Temperament

The United States-based New York longitudinal study reported that temperament differences between males and females appear shortly after infancy and increase with age on the following New York longitudinal study qualities: adaptability, approach/withdrawal, activity, and sensory threshold (Thomas & Chess, 1977). During the period from 4 months to 4 years, males are more adaptable and approachable than females. Between ages 8 to 12, males display higher levels of activity and sensitivity (Maziade, et al., 1986).

Older children and youth in the United States generally prefer extroverted, imaginative, and organized styles. They display age related differences on extroversion-introversion styles (i.e., a preference for extroversion increases from 8 to 13), on practical-imaginative styles (i.e., a preference for an imaginative style generally increases with age), and on organized-flexible styles (i.e., a preference for a flexible style generally increases with age) (Oakland, et al., 1996; Bassett, 2005).

Studies also identify the presence of gender differences (Oakland, et al., 1996; Bassett & Oakland, 2009). More females than males prefer feeling and organized styles while more males than females prefer thinking and flexible styles. Gender differences on thinking-feeling

appear early, at least by age 8, are sustained through adulthood, and may be universal (Myers & McCaulley, 1985; Hammer & Mitchell, 1996; Myers, et al., 1998).

### **Cross-National Studies of Children's Temperament**

Research in the behavioral sciences increasingly reflects a need for cross-national information (Achenbach & Rescorla, 2007; Byrne, Oakland, Leong, van de Vijver, Hambleton, Cheung, & Bartram, 2009; Wedding & Stevens, 2004). Such research examines the degree to which psychological traits or behaviors are consistent among people who live in countries that differ by culture (Byrne et. al., 2009; Strelau & Angleitner, 1994). An understanding of children's temperament from a cross-national perspective is important in light of international interest in temperament as well as the continuing debate concerning the extent to which temperament constructs are biologically or environmentally rooted (Joyce, 2010). Cross-national studies of temperament may provide evidence for temperament being biologically rooted and intrinsic to the individual and therefore forms universal human traits. Alternatively, studies may show temperament to be environmentally rooted. Information on temperament qualities in children and youth also may help establish the possible age of onset of temperament differences.

Research by Oakland and his colleagues is cognizant of emic and etic approaches (Berry, Poortinga, Segall, & Dasen, 1992) in their international studies of children's temperament, including children in Australia (Oakland, Faulkner, & Bassett, 2005), Costa Rica (Oakland & Mata, 2007), Gaza (Oakland, Alghorani, & Lee, 2006), Greece (Oakland & Hatzichristou, 2010), Hungary (Katona & Oakland, 2000), India (Oakland, Singh, Callueng, & Goen, 2011), Nigeria (Oakland, Mogaji, & Dempsey, 2006), People's Republic of China (Oakland & Lu, 2006), Pakistan (Oakland, Callueng, Rizwan, & Aftab, 2011), Romania (Oakland, Illiescu, Dinca, & Dempsey, 2009), Samoa (Callueng, Lee Hang, Gonzales, Ling-So'o, & Oakland, 2011), South Africa (Oakland & Pretorius, 2009), South Korea (Oakland & Lee, 2010), United States (Bassett & Oakland, 2009), Venezuela (Leon, Oakland, Wei, & Berrios, 2009), and Zimbabwe (Oakland, Mpofu, & Sulkowski, 2007).

Emic approaches examine culture-specific traits while etic approaches examine whether traits and behaviors are universal and independent of one or more cultures. Initial research on any trait typically is directed toward describing the trait. Thus, the general purposes of this cross-national research are first to examine commonly displayed temperament traits of children within a country or region and then compare them with children in other countries or regions. This strategy is consistent with cross-national studies by McCrae and Costa (1997) and others (e. g., Berry, Poortinga, Segall, & Dasen, 1992; Macdavid, McCaulley, & Kainz, 1991; Plomin & Dunn, 1986) that examine the possible universality of temperament and personality traits.

### **Current Study**

The primary purpose of this research is to describe temperament style preferences in a sample of Japanese students at four age groups, to examine possible influence of gender and age, and to compare their temperament style preferences with children in the U.S. A discussion of temperament styles preferences among U.S. children, including age and gender differences, is not a primary focus of this study and can be found elsewhere (Oakland et al, 1996; Bassett, 2005; Bassett & Oakland, 2009). Data on U.S. children are included to

provide a direct cross-national comparison.

The following questions are addressed in this study: Do Japanese children display differences in their preferences for extroversion-introversion, practical-imaginative, thinking-feeling, or organized-flexible styles? Do gender and age influence temperament styles preferences? Do Japanese and U.S. children differ in their preferences for these styles?

## Method

### Participants

A sample of 493 Japanese children was drawn from four public schools in Miyakonojo, a city of 170,000 inhabitants and one of the main metropolitan areas in the southern Kyushu region in Japan. The sample formed the following four age groups: 9-10 ( $n = 147$ , 49% males) 11-12 ( $n = 141$ , 43% males), 13-14 ( $n = 93$ , 56% males), and 15-16 ( $n = 112$ , 44% males). All children came from lower to upper middle class families.

A sample of 500 U.S. children was drawn from the U.S. Student Style Questionnaire's standardization sample (Oakland et al., 1996). The sample formed the following four age groups with approximately 50% males in each group: 9-10 ( $n = 112$ ) 11-12 ( $n = 164$ ), 13-14 ( $n = 149$ ), and 15-16 ( $n = 75$ ). The U.S. standardization data were designed to reflect 1990 U.S. Bureau of the Census data. Thus, the US sample is stratified on five variables: age, gender, race/ethnicity, geographic region, and school type. The subject pool of 7,902 public and private school children ranged in ages 8 through 17 years. Three racial/ethnic groups (Whites, Blacks, and Hispanics) were represented proportionately; approximately 50% were males in each racial-ethnic group.

### Measure

The Student Styles Questionnaire (SSQ; Oakland, Glutting, & Horton, 1996) is patterned after the Jungian constructs popularized by the Myers-Briggs Type Indicator (Myers & McCaulley, 1985). The SSQ, a self-report paper and pencil group administered measure of temperament type for children ages 8 through 17, is completed within approximately 20 minutes. Each of its 69 forced-choice items has two alternatives that provide for an assessment of preferred behaviors associated with one of four bipolar traits: extroversion (E) or introversion (I), practical (P) or imaginative (M), thinking (T) or feeling (F), and organized (O) or flexible (L). The EI scale has 23 items, the PM scale has 16 items, the TF scale has 10 items, and the OL scale has 26 items. Additionally, 6 items provide information simultaneously on two scales.

Test-retest reliability coefficients derived over an 8 month period, are .80, .67, .70, and .78 for EI, PM, TF, and OL respectively. Results of factor analyses studies indicate the SSQ's factor structure is consistent and stable for U.S. children who differ by age, gender, and racial-ethnic group (Stafford & Oakland 1996a; 1996b). Factor analytic studies of data from children from seven countries generally found a stable factor structure and thus support the use of the SSQ internationally (Benson, Oakland, & Shermis, 2009). External validity, using contrasted groups, convergent validity, and divergent validity, provides additional strong support for the SSQ's validity (Oakland et al., 1996).

Psychometric properties of the SSQ Japanese version were examined with data from the current sample. Results of the confirmatory factor analysis using robust maximum likelihood as estimator and item parcels as factor indicators suggest that the data yield an acceptable fit of a four-factor model of temperament as measured by the SSQ:  $\chi^2(38) =$

90.72,  $p < .001$ ; RMSEA = .05 CFI = .95; and TLI = .92. All item parcels load appreciably on their corresponding factors, ranging from .47 to .79. Factor correlations generally were low and not significant except for PM and OL ( $r = .29$ ). The internal structure of the SSQ Japanese version is consistent with previous studies (i.e., Benson, Oakland, & Shermis, 2009; Oakland et al., 1996; Stafford & Oakland 1996a; 1996b)

Cronbach's alpha coefficients ( $\alpha$ ) of scores from SSQ Japanese version were estimated for each temperament trait using dichotomous item responses. Results indicated acceptable reliability of responses for EI, TF, and OL with alpha coefficients equal to .78, .62, and .73, respectively. Alpha coefficient of .54 for PM suggests a marginal reliability of item responses. These coefficients are considered tentative as Cronbach's alphas underestimate reliability of items with less than five response categories like that used in the SSQ (Zumbo, Gaddermann, & Zeisser, 2007).

## Procedure

Translation of the SSQ for use with Japanese children was accomplished through the back translation sequential method (Hambleton et al., 2005). The SSQ's 69 items and directions were reviewed by the second and third authors (one of whom is native to Japan) who live and work at Japanese universities. They found them to be generally suitable for Japanese children and consistent with their culture. The items and directions for administration were translated separately into Japanese by the two aforementioned authors and their discrepancies were resolved by mutual agreement of the most developmentally and culturally appropriate translation. Subsequently, a professor native to Japan and is competent in both Japanese and English languages was requested to back translate the SSQ into English. Except for minimal syntax and sentence structure differences, the SSQ items in the Japanese and English versions were found to be equivalent by content meaning. Given the extensive work and familiarity of the third author with Japanese children, a pilot study of the SSQ Japanese version was deemed unnecessary. Hence, the translated test was administered to a sample of Japanese children consistent with the administration procedures described on the SSQ record form.

## Data Analysis

Temperament typically is considered to be a type rather than a continuous quality (Bassett, 2005; Bassett & Oakland, 2009; Buss & Plomin, 1984; Hall & Lindzey, 1978; Jung, 1946; Lawrence, 1982; Macdaid, McCaulley, & Kainz, 1991; Plomin, & Dunn, 1986; Rothbart & Jones, 1998; Teglasi, 1998b; Thomas & Chess, 1977). Personality also can be and often is viewed in its type form (McCrae & Costa, 1997). This belief guided the data interpretation methods.

The frequency of Japanese and U.S. children who express a preference for each of the eight styles was determined in the following fashion. Individual responses on each of the 69 items were examined to determine whether a child selected more options from one of the two bipolar types. For example, among the 23 extroversion-introversion items, children who selected more extroverted than introverted options were classified extroverted. Conversely, children who selected more introverted options were classified introverted. Children who selected an equal number of options on a scale (e. g., extroversion-introversion) displayed no discernable preference on that bipolar type and thus were dropped from subsequent analyses

on that scale. Less than 5% of the sample was excluded from one of the four bipolar types due to their experiencing an equal number of item preferences on one of the four scales.

Preliminary analysis involved the use of chi-square ( $\chi^2$ ) test to determine whether the frequency of Japanese children who preferred either extroversion or introversion, practical or imaginative, thinking or feeling, and organized or flexible styles differ significantly in reference to the total group. Logistic regression was used to examine the influence of age, sex, and country in differentiating the preferences of children in the four bipolar temperament traits. Logistic regression is deemed appropriate when the purpose is to predict categorical group membership (e.g., extroverted vs. introverted styles) based on variables that are either continuous or discrete (Tabachnick & Fidell, 2006). Logistic regression analyses were conducted for each of the temperament traits to assess the extent to which gender and age influence the temperament style preferences of Japanese children. Similarly, sequential logistic regression analyses were conducted to assess cross-national differences in temperament style preferences controlling for the effects of gender and age. Odds ratio (OR) was used to assess the likelihood of preferences for a temperament style based on the explanatory variables of gender, age, and country. A .05 significance level was set for all analyses.

## Results

### Temperament Preferences of Japanese Children

As reported in Table 2, more Japanese children prefer extroverted (66%) than introverted (34%) styles,  $\chi^2(1) = 51.28, p < .001$ ; practical (70%) than imaginative (30%) styles,  $\chi^2(1) = 67.20, p < .001$ ; and organized (67%) than flexible (33%) styles,  $\chi^2(1) = 50.01, p < .001$ . Japanese children have a balanced preference for thinking (50%) and feeling (50%) styles,  $\chi^2(1) = .02, p > .05$ .

The possible influences of gender and age on temperament styles preferences of Japanese children were examined using logistic regression analyses. Cross-national differences in temperament style preferences also were examined using sequential logistic regression analyses. Results are displayed in Table 3.

**Extroverted-Introverted Styles.** The general model for extroverted-introverted styles was not significant,  $\chi^2(4) = 2.76, p > .05$ , Nagelkerke's  $R^2 = .01$ . Gender [Wald  $\chi^2(1) = 1.02, p > .05$ ] and age [Wald  $\chi^2(3) = 1.83, p > .05$ ] were not associated with children's preferences for extroverted and introverted styles.

**Practical-Imaginative Styles.** The general model for practical-imaginative styles was not significant,  $\chi^2(4) = 3.23, p > .05$ , Nagelkerke's  $R^2 = .01$ . Gender [Wald  $\chi^2(1) = 1.67, p > .05$ ] and age [Wald  $\chi^2(3) = 1.80, p > .05$ ] were not associated with children's preferences for practical and imaginative styles.

**Thinking-Feeling Styles.** The general model for thinking-feeling styles was significant,  $\chi^2(4) = 42.32, p < .001$ , with the combination of gender and age accounting for approximately 13% of the variance in the children's preferences, Nagelkerke's  $R^2 = .13$ . Gender was significantly associated with children's preferences for thinking-feeling styles, Wald  $\chi^2(1) =$

39.78,  $p < .001$ . Males are more likely to prefer a thinking style and females are more likely to prefer a feeling style (OR = 3.81). Age was not significantly associated with children's preferences for thinking-feeling styles, Wald  $\chi^2(3) = 0.20$ ,  $p > .05$ .

Prediction success indicated that both gender and age correctly classified approximately 64% of children displaying a preference for thinking style and approximately 68% of children displaying a preference for feeling style, with an overall success rate of approximately 66%.

**Organized-Flexible Styles.** The general model for organized-flexible styles was significant  $\chi^2(4) = 34.61$ ,  $p < .001$ , with the combination of gender and age accounting for approximately 10% of the variance in the children's preferences, Nagelkerke's  $R^2 = .10$ . Gender was significantly associated with children's preferences for organized-flexible styles, Wald  $\chi^2(1) = 6.43$ ,  $p < .05$ . Compared to females, males are more likely to prefer a flexible type (OR = .59). Similarly, age was significantly associated to children's preferences for organized-flexible styles, Wald  $\chi^2(3) = 25.67$ ,  $p < .001$ . Children ages 9-10 are more likely to prefer an organized style than ages 11-12 (OR = 2.29), 13-14 (OR = 3.19), and 15-16 (OR = 4.26). Preference for a flexible style increases with age.

Prediction success indicated that both gender and age correctly classified approximately 92% of children displaying an organized style and approximately 14% of children displaying a preference for a flexible style, with an overall success rate of approximately 68%.

Table 2

*Temperament Preferences of Children from Japan and the United States for total group, gender, and four age groups (by percent)*

	E	I	P	M	T	F	O	L
<i>Japan (N = 493)</i>								
Age 9-10	69	31	66	34	50	50	82	18
Age 11-12	67	33	72	28	49	51	67	33
Age 13-14	66	34	71	29	53	47	58	42
Age 15-16	62	38	72	28	51	49	52	48
Male	64	36	73	27	67	33	61	39
Female	68	32	67	33	35	65	72	28
Total	66	34	70	30	50	50	67	33
<i>United States (N = 500)</i>								
Age 9-10	48	52	39	61	54	46	83	17
Age 11-12	56	44	41	59	53	47	73	27
Age 13-14	61	39	43	57	51	49	62	38
Age 15-16	55	45	44	56	48	52	53	47
Male	56	44	43	57	74	26	62	38
Female	55	45	40	60	30	70	75	25
Total	56	44	42	58	52	48	69	31

*Note.* E = Extroverted; I = Introverted; P = Practical; M = Imaginative; F = Feeling; O = Organized; L = Flexible.

## Cross-national Comparisons in Temperament Preferences

A sequential logistic regression analysis was employed to examine the influence of country on each of the four bipolar temperament traits controlling for age and gender. The analysis was conducted in the following manner. In step 1, gender and age were entered in the equation to examine their contribution in differentiating temperament style preferences of children from Japan and the United States. In step 2, country was added to gender and age to examine its unique contribution, if any, in differentiating temperament style preferences over and above that of gender and age.

**Extroverted-Introverted Styles.** The general model from Step 1 was not significant,  $\chi^2(4) = 1.26, p > .05$ , Nagelkerke's  $R^2 = .00$ . Gender [Wald  $\chi^2(1) = 0.50, p > .05$ ] and age [Wald  $\chi^2(3) = 0.80, p > .05$ ] were not associated with preferences for these temperament styles.

When country was added in Step 2, the general model was significant,  $\chi^2(5) = 14.04, p < .05$ , thus indicating that country [Wald  $\chi^2(1) = 12.67, p < .001$ ] differentiates children's preferences for extroverted and introverted styles and accounts for virtually all of the variance in the preferences for these styles,  $\Delta$  Nagelkerke's  $R^2 = .02$ . Compared to U.S. children, Japanese children are more likely to prefer an extroverted style (OR = 1.61). Consistent in Step 1, gender [Wald  $\chi^2(1) = 0.40, p > .05$ ] and age [Wald  $\chi^2(3) = 2.11, p > .05$ ] were not associated with preferences for these temperament styles.

Prediction success indicated that the combination of country, gender, and age in Step 2 correctly classified approximately 100% of children displaying an extroverted style and 0% of children displaying an introverted style, with an overall success rate of approximately 61%.

**Practical-Imaginative Styles.** The general model from Step 1 was not significant,  $\chi^2(4) = 3.30, p > .05$ , Nagelkerke's  $R^2 = .01$ . Gender [Wald  $\chi^2(1) = 0.83, p > .05$ ] and age [Wald  $\chi^2(3) = 2.57, p > .05$ ] were not associated with preferences for these temperament styles.

When country was added in Step 2, the general model was significant,  $\chi^2(5) = 78.99, p < .001$ , thus indicating that country [Wald  $\chi^2(1) = 71.74, p < .001$ ] differentiates children's preferences for practical and imaginative styles and contributes approximately 10% of the variance in the preferences for these styles,  $\Delta$  Nagelkerke's  $R^2 = .10$ . Japanese children are more likely to prefer a practical style and U.S. children are more likely to prefer an imaginative style (OR = 3.35). Consistent in Step 1, gender [Wald  $\chi^2(1) = 1.65, p > .05$ ] and age [Wald  $\chi^2(3) = 1.82, p > .05$ ] were not associated with these temperament styles.

Prediction success indicated that the combination of country, gender, and age in Step 2 correctly classified approximately 59% of children displaying a practical style and 70% of children displaying an imaginative style, with an overall success rate of approximately 64%.

**Thinking-Feeling Styles.** The general model from Step 1 was significant,  $\chi^2(4) = 137.50, p < .001$ , indicating that the combination of gender and age differentiates children's preferences for thinking and feeling styles and accounts for approximately 19% of the variance in these styles, Nagelkerke's  $R^2 = .19$ . Gender was associated to children's preferences for thinking-feeling styles [Wald  $\chi^2(1) = 126.45, p < .001$ ] and age was not [Wald  $\chi^2(3) = 0.23, p > .05$ ]. Males are more likely to prefer a thinking style and females are more likely to prefer a feeling style (OR = 5.08).

When country was added in Step 2, the general model was significant,  $\chi^2(5) = 149.78$ ,  $p < .001$ . However, the variable of country did not contribute to the variance in thinking and feeling styles ( $\Delta$  Nagelkerke's  $R^2 = .00$ ). Country [Wald  $\chi^2(1) = 0.12$ ,  $p > .05$ ] and age [Wald  $\chi^2(3) = 0.21$ ,  $p > .05$ ] were not significantly associated to children's preferences for these styles. Consistent in Step 1, gender [Wald  $\chi^2(1) = 129.39$ ,  $p < .001$ ] was found to be associated to children's preferences for thinking-feeling styles (OR = 5.30). Thus, in both Japan and the United States, males generally prefer thinking while females generally prefer feeling styles.

Prediction success indicated that the combination of country, gender, and age in Step 2 correctly classified approximately 68% of children who display a thinking style and 71% of children who display a feeling style, with an overall success rate of approximately 69%.

**Organized-Flexible Styles.** The general model from Step 1 was significant ( $\chi^2[4] = 68.03$ ,  $p < .001$ ), thus indicating the combination of gender and age differentiates children's preferences for organized and flexible styles and accounts for approximately 10% of the variance in these styles (Nagelkerke's  $R^2 = .10$ ). Gender was significantly associated with children's preferences for organized-flexible styles, Wald  $\chi^2(1) = 16.47$ ,  $p < .001$ . Compared to females, males are more likely to prefer a flexible style (OR = .56). Similarly, age was significantly associated to children's preferences for organized-flexible styles, Wald  $\chi^2(3) = 47.82$ ,  $p < .001$ . Children ages 9-10 are more likely to prefer an organized style than ages 11-12 (OR = 2.04), 13-14 (OR = 3.07), and 15-16 (OR = 4.35).

When country was added in Step 2, the general model also was significant,  $\chi^2(5) = 69.26$ ,  $p < .001$ . However, the variable of country did not contribute to the variance in organized and flexible styles ( $\Delta$  Nagelkerke's  $R^2 = .00$ ). Country was not significantly associated with preferences for organized and flexible styles, Wald  $\chi^2(1) = .12$ ,  $p > .05$ . Consistent in Step 1, gender (Wald  $\chi^2[1] = 16.59$ ,  $p < .001$ ) and age (Wald  $\chi^2[3] = 48.11$ ,  $p < .001$ ) were significantly associated to children's preferences for these styles. Prediction success indicated that the combination of country, gender, and age in Step 2 correctly classified approximately 94% of children who display an organized style and 14% of children who display a flexible style, with an overall success rate of approximately 68%.

## Discussion

The purpose of this research is to describe temperament style preferences in a sample of Japanese students at four age groups, examine possible gender and age differences among them, and compare their temperament style preferences with children in the U.S. A focus on temperament is important in that these qualities are likely to impact children's learning, family relationships, interpersonal relationships, and formation of values (Keogh, 2003; Kohnstamm, 1987; Lawrence, 1982; Teglasi, 1998b; Thomas, Chess, & Birch, 1968, 1970). Thus, knowledge of children's temperament preferences is essential when understanding their behaviors. When accurately understood, this knowledge can be translated into instructional styles designed to promote learning and minimize behavior difficulties (Horton & Oakland, 1997).

Table 3  
*Summary of Logistic Regression Results*

<b>Variables</b>	<b>B</b>	<b>S.E.</b>	<b>Wald <math>\chi^2</math></b>	<b>OR</b>	<b>95% C.I.</b>
<b>Japanese children (N = 493)</b>					
<i>Extroverted-Introverted Styles</i>					
Gender (Female)	-0.19	0.19	1.02	0.82	0.57-1.20
Age			1.83		
<i>Practical-Imaginative Styles</i>					
Gender (Female)	0.28	0.22	1.67	1.32	0.87-2.03
Age			1.80		
<i>Thinking-Feeling Styles</i>					
Gender (Female)	1.34	0.21	39.78***	3.81	2.51-5.77
Age			0.20		
<i>Organized-Flexible Styles</i>					
Gender (Female)	-0.53	0.21	6.43*	0.59	0.40-0.89
Age			25.67***		
11-12	0.83	0.29	8.14**	2.29	1.30-4.04
13-14	1.16	0.31	13.65***	3.19	1.72-5.89
15-16	1.45	0.29	23.70***	4.26	2.38-7.64
<b>Japan &amp; U.S. Children (N = 993)</b>					
<i>Extroverted-Introverted Styles</i>					
Step 1					
Gender (Female)	-0.09	0.13	0.50	0.91	0.71-1.18
Age			0.80		
Step 2					
Gender (Female)	-0.08	0.13	0.40	0.92	0.71-1.19
Age			2.11		
Country	0.47	0.13	12.67***	1.61	1.24-2.09
<i>Practical-Imaginative Styles</i>					
Step 1					
Gender (Female)	0.21	0.13	0.83	1.13	0.87-1.47
Age			2.57		
Step 2					
Gender (Female)	0.18	0.14	1.65	1.20	0.91-1.57
Age			1.82		
Country	1.21	0.14	71.74***	3.35	2.53-4.43
<i>Thinking-Feeling Styles</i>					
Step 1					
Gender (Female)	1.63	0.15	126.45***	5.08	3.83-6.75
Age			0.23		
Step 2					
Gender (Female)	1.63	0.15	126.39***	5.08	3.83-6.75

*Cont. of Table 3*

Age			.21		
Country	-0.05	0.15	.12	0.73	0.71-1.27
<i>Organized-Flexible Styles</i>					
Step 1					
Gender (Female)	-0.58	0.14	16.47***	0.56	0.42-0.74
Age			47.82***		
11-12	0.71	0.29	8.14**	2.29	1.30-4.04
13-14	1.16	0.31	13.65***	3.19	1.72-5.89
15-16	1.45	0.29	23.70***	4.26	2.38-7.64
Step 2					
Gender (Female)	-0.59	0.14	16.59***	0.56	0.42-0.74
Age			47.82***		
11-12	0.79	0.21	11.91**	2.07	1.37-3.14
13-14	1.15	0.22	28.24***	3.17	2.07-4.85
15-16	1.47	0.23	42.22***	4.34	2.79-6.75
Country	-0.16	0.15	1.23	0.85	0.64-1.13

*Note.*  $\beta$  = regression coefficient; S.E. = standard error; OR = odds ratio; C.I. = confidence interval

Reference group: Gender = male; Age = 9-10; Country = U.S.

\*\*\*  $p < .001$  \*\*  $p < .001$  \*  $p < .05$

General findings indicate that more Japanese children prefer extroverted than introverted, practical than imaginative, and organized than flexible styles. Although their preference for thinking and feeling styles is balanced, gender differences are significant. In general, males prefer thinking and females prefer feeling styles. Gender and age differences are apparent on organized-flexible styles. More females prefer organized style and more males prefer flexible style. Preference for a flexible style increases with age. Cross-national differences are found only on extroverted-introverted and practical-imaginative styles. In contrast to children in the U.S., those in Japan are more likely to prefer extroverted and practical styles.

### Temperament Preferences of Japanese Children

**Extroversion-Introversion Styles.** Male and female Japanese children show a discernable preference for an extroverted style, with 66% reflecting this preference. Gender and age differences are not apparent for extroverted and introverted styles. Children who prefer an extroverted style generally are outgoing and are stimulated by the people and conditions in their environment. They prefer to be with others with whom they can openly talk and share their thoughts and feelings, including very personal issues. In contrast, children who prefer an introverted style generally derive their energy from themselves. They prefer to have a few close friends, have a few well-developed interests, and enjoy spending time alone.

The general preference of Japanese children for an extroverted style is supported by information from teachers who describe Japanese students as sociable (i. e., talkative, cheerful, vital, and energetic) and interpersonally supportive (i. e., considerate of others, warm, and responsive)—qualities consistent with an extroverted style (Shimizu, Gjerde, &

Iwamoto, 1988). Japanese students who are extroverted have been described as improving their academic proficiency by employing learning strategies that involve interacting verbally with peers—again qualities consistent with an extroverted style (Wakamoto, 2000). Extroversion also contributes to intercultural adjustment among Japanese high school students (Yashima, 1995).

**Practical-Imaginative Styles.** Male and female Japanese children show a discernable preference for a practical style, with 70% reflecting this preference. Gender and age differences are not apparent for these styles.

Children who prefer a practical style generally are oriented to current conditions, not the future, and focus their attention on conditions in the environment that appeal to their physical senses. They prefer details, precision, simplicity over complexity, and focus on practical daily events and issues. Practical styles share some features of analytic and field-independent learning styles that characterized Japanese students (Oxford & Burry-Stock, 1995).

In contrast, children who prefer an imaginative style prefer theories to facts and focus their attention on generalizations and global concepts. They often base their decisions on intuitive hunches and may overlook details. They enjoy opportunities that allow them to use their imagination and to contribute their unique ideas.

**Thinking-Feeling Styles.** Japanese children show a balanced preference for thinking and feeling styles. However, gender differences are apparent. Approximately two-thirds of males prefer a thinking style while a similar percent of females prefer a feeling style. Age differences are not apparent.

Whether the origin of temperament preferences is biologically or environmentally rooted has been subject to considerable debate (Joyce, 2010). Most scholars who specialize in temperament believe temperament to be influenced primarily by its biological roots yet may be influenced somewhat by the environment and personal choices (Bates & Wachs, 1994; Goldsmith, et al., 1987; Kagan, 1994; Keogh, 2003; Oakland, Glutting, & Horton, 1996).

Thus, thinking-feeling preferences are assumed to be largely inherent and thus influence gender role preferences. For example, the finding that differences in thinking-feeling preferences occur during infancy support prevailing theory among temperament scholars that its origin mainly is biological, not cultural (Rothbart, Ahadi, & Evans, 2000).

We recognize that some scholars believe gender differences in thinking-feeling styles may be attributed to gender role expectations found in Japanese culture (Sugihara & Kasturada, 2000). These roles characterize Japanese males as competitive, objective and analytical—traits typical of people with strong a preference for thinking style. In contrast, Japanese females generally are characterized as affectionate and sensitive to other's feelings. However, we advance the belief that the Japanese culture may reflect and reinforce biologically-based temperament, including thinking-feeling, rather than originating from its culture.

**Organized-Flexible Styles.** Japanese children show a discernable preference for an organized style, with 67% reflecting this preference. Gender and age differences are apparent. Females generally prefer an organized style (72%), and relatively more males (39%) than females (28%) prefer a flexible style. Age preferences for an organized style decline linearly.

Children who prefer an organized style like to make decisions as soon as possible and

prefer structure and organization. They generally prefer structured and organized setting and tend to be persistent. The preferences for organized style among Japanese children is consistent with the description that Japanese students generally are orderly, organized, and rely on plans (Oxford & Burry-Stock, 1995). Moreover, this orientation to an organized style is assumed to be reinforced by the Japanese culture, given its emphasis on process over product. That is, the process by which work is completed may be more important than the resulting product. Hence, Japanese teachers have been described as motivating students to achieve by encouraging them to follow and perfect desired processes (White, 1987).

In contrast, children who prefer flexible styles delay decision-making as long as possible and feel that they never have sufficient information to make decisions. They prefer a flexible, open schedule, enjoy surprises, and adapt well to new situations. They may not respond well to externally imposed rules and regulations. The tendency to prefer flexible styles as children become older may be related to a developmental trajectory (Bassett & Oakland, 2009). This developmental trajectory also includes a desire for increased autonomy and sense of responsibility together with adult expectations for higher levels of adaptive behaviors. Additionally, the finding that Japanese males are more likely than females to prefer a flexible style is consistent with other literature (Bassett & Oakland, 2009; Costa & MacCrae, 1992; Hammer & Mitchel, 1996). Males generally prefer fewer externally imposed rules while females generally are more willing to accept them for themselves and expect them from others.

### **Cross-national Comparisons in Temperament Preferences**

Children from Japan and the U.S. display similar preferences for organized-flexible styles: both prefer organized over flexible styles. They have a balanced preference for thinking-feeling styles. They differ on extroverted-introverted and practical-imaginative styles. More Japanese than U.S. children prefer extroverted and practical styles.

Children from 12 of the 16 countries on which we have similar data also show a general preference for an extroverted style: Australia (Oakland, Faulkner, & Bassett, 2005), Costa Rica (Oakland & Mata, 2007), Greece (Oakland & Hatzichristou, 2010), India (Oakland, Singh, Callueng, & Goen, 2011), Pakistan (Oakland, Callueng, Rizwan, & Aftab, 2011), People's Republic of China (Oakland & Lu, 2006), Romania (Oakland, Illiescu, Dinca, & Dempsey, 2009), Samoa (Callueng, Lee Hang, Gonzales, Ling-So'o, & Oakland, 2011), South Korea (Oakland & Lee, 2010), United States (Bassett & Oakland, 2009), Venezuela (Leon et al, 2009), and Zimbabwe (Oakland, Mpofu, & Sulkowski, 2007). Thus, the children from most countries share these preferences shown by Japanese children.

Children from 12 countries also show a general preference for a practical style: Gaza (Oakland, Alghorani, & Lee, 2006), Greece (Oakland & Hatzichristou, 2010), Hungary (Katona & Oakland, 2000), India (Oakland, Singh, Callueng, & Goen, 2011), Nigeria (Oakland, Mogaji, & Dempsey, 2006), Pakistan (Oakland, Callueng, Rizwan, & Aftab, 2011), People's Republic of China (Oakland & Lu, 2006), Romania (Oakland, Illiescu, Dinca, & Dempsey, 2009), Samoa (Callueng, Lee Hang, Gonzales, Ling-So'o, & Oakland, 2011), South Africa (Oakland & Pretorius, 2009), Venezuela (Leon et al, 2009), and Zimbabwe (Oakland, Mpofu, & Sulkowski, 2007).

Children in eight countries generally prefer a thinking style while children in six countries generally prefer a feeling style. Gender differences on thinking-feeling styles, with males more likely to prefer thinking and females more likely to prefer feeling styles, are more

common among children from Australia (Oakland, Faulkner, & Bassett, 2005), Costa Rica (Oakland & Mata, 2007), Greece (Oakland & Hatzichristou, 2010), Nigeria (Oakland, Mogaji, & Dempsey, 2006), Pakistan (Oakland, Callueng, Rizwan, & Aftab, 2011), People's Republic of China (Oakland & Lu, 2006), Romania (Oakland, Illiescu, Dinca, & Dempsey, 2009), South Africa (Oakland & Pretorius, 2009), United States (Bassett & Oakland, 2009), Venezuela (Leon et al, 2009).

Children from all countries with the exception of South Korea (Oakland & Lee, 2010) also show a general preference for an organized style—albeit with more males than females preferring a flexible style. Moreover, similar to the data on Japanese children, children in most countries show an early and strong preference for an organized style, one that decreases with children's age.

### **Implications of Temperament Preferences**

This study contributes to existing literature on temperament style preferences in Japanese population, most especially extending the application of temperament styles theory in Japanese children and youth. Knowledge of temperament styles can provide meaningful ideas to enhance self-understanding and personal performance. Application of temperament styles is multi-faceted (Joyce, 2010). Temperament qualities impact school achievement (Keogh, 2003; Horton & Oakland, 1997). Thus, the proper use of temperament styles can promote academic/educational experiences of students through curriculum planning, academic intervention, classroom management, and teaching/learning strategies. More broadly, knowledge of temperament promotes the attainment of goodness-of-fit or matching preferred temperament preferences of students and teachers in classroom setting. Students' educational experiences are expected to be more successful when teachers align their teaching approaches and practices to the temperament styles of their students.

Temperament preferences are associated with non-pathological social-emotional functioning (Keogh, 2003). They convey psychological strengths and resources of children that can suggest practical and personalized approaches for mental health professionals in schools and other clinical settings that assist children and youth to manage their difficulties and problems. For example, Japanese children who prefer extroverted style may benefit from group interventions and those who prefer introverted style may benefit from more individualized interventions. The findings on gender and age differences in temperament styles of Japanese children can be incorporated into intervention planning. For example, given their thinking style preferences, use of cognitive restructuring through cognitive-behavioral interventions may be more appealing to Japanese males. Scaffolding and the use of homework in counseling benefit Japanese children who prefer organized styles, especially the younger children. In contrast, older Japanese children who display a proclivity for a flexible style may benefit from a less directive and eclectic approach to counseling.

Cross-national research on temperament preferences of can provide additional explanation to the idea that temperament may be tempered by the environment and cultural choice. Temperament preferences become more defined and stable through the process of enculturation and accommodation, an idea that is associated with culture as constitutive of behavior (Miller, 1999).

## Limitations and Future Research

This is the first known report of temperament styles among Japanese children. The availability of current data from other temperament style studies of Japanese children and adults would allow us to examine the reliability of these findings and further trace possible gender and age trends (e.g. those seen in thinking-feeling and organized-flexible styles). Moreover, Japanese children living in Miyakonojo in the southern Kyushu region may not be representative of Japanese children generally. Additional research using the Japanese adapted version of the SSQ with children in other regions of Japan also is encouraged. Lastly, temperament scales developed in the light of Japanese culture and standardized on Japanese children may be preferable to those that are adapted for use in this country.

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